THE FORESTRY BRANCH

SIXTH ANNUAL REPORT

1988-1989

MANITOBA NATURAL RESOURCES

INTRODUCTION

The year ending March 31, 1989, marked the close of the five-year Canada-Manitoba Forest Renewal Agreement which contributed significantly to the enhancement of forestry and forest management in Manitoba. In particular, the five-year agreement under the Economic Regional Development Agreements (ERDA) saw significant contributions on the part of the Federal Government and the Province of Manitoba towards the enhancement of reforestation and forest renewal activities.

Growth of the forest renewal program in Manitoba continued in the final year of the shareable agreement between Manitoba and Canada with close to 16 million seedlings being produced and planted on cutover lands. Increases in site preparation, otherwise known as scarification, and natural seeding continued, as did activities in a number of other very important areas. The Geographic Information Systems (FORIST) continued on a double-shift basis and at year-end more than a thousand map sheets had been entered into the library of the Geographic Information System. These map sheets included the townships in which the highest level of forest management both in terms of harvesting and renewal have been carried out. Continued and increased activities were experienced in all program and sub-program areas of the agreement, tree improvement, fire control, public information and communications, technology transfer, research into herbicides, economic development and economic analysis of The Forest Act and Regulations. Reforestation of not-sufficiently restocked and forest renewal of backlog lands also continued during the year but drew to a close with the ending of the current five-year agreement.

During the year, prospects for a second five-year shareable agreement between Manitoba and Canada looked promising. However, as of year-end

discussions had only occurred between the Branch and the Northern Forest Research Centre in Edmonton. Negotiations at a more senior level have not taken place as of this date but the Branch is hopeful that there will be at least a continuation or an extension of the first five-year agreement for a sixth year if a new shareable agreement is not forthcoming. In that eventuality, it is expected that a second five-year agreement under the ERDA will be concluded during 1989-1990 fiscal year.

During the course of the year, a new section of the branch, the Forest Operations Section was created. The position of Chief of Forest Operations was filled by the Chief of the Forest Protection Section and the vacancy that resulted was filled through a public competition. However, the Chief of Forest Operations moved outside the Province and at year-end his position was to be filled through an internal competition. The other organizational changes are shown in the organization chart.

The Branch has been quite involved in the discussions surrounding the divestiture of Manfor Ltd. A number of interested companies have met with Branch officials to discuss timber supply and the availability of increased volumes of wood through expansion of facilities at Manfor in The Pas. The annual meeting with Manfor Ltd. was in March, when the activities of the company and the proposed plans for the upcoming operating year were reviewed. The need for a five-year report to set out the company's forest renewal activities during the 1984-1988 period was discussed.

In the area of forest management a number of significant changes occurred. The agreement between Abitibi-Price Inc. and the Province was amended during the year to ensure the company's contributions for forest renewal were deposited directly in a trust fund. This new arrangement will help the flow of funding

into the Province and back into the forest renewal fund. Another important change to the agreement related to the rate at which lands may be withdrawn for public use. Specifically, a 10-year and 100 schedule agreement was set up which would see no more than 5% of the total licence area being withdrawn for public use during the 100-year period and the equivalent of 0.5% during any 10-year period being withdrawn for other incompatible uses. The second year of the five-year Manitoba/Abitibi Forest Management License Agreement was 1988. A five-year review of the activities of the company was held and the five-year operating and renewal plan for the third year of the five-year period has been submitted and is under review. In accordance with the new Manitoba Environment Act, an expanded review procedure will be followed in the coming months. Under the terms of this Act, a ministerial agreement made between the Ministers of Environment and Natural Resources approves the streamlined process of reviewing and licensing five-year operating and renewal plans of both the private sector and the Branch's Forest Management Units. It is anticipated that the ministerial review and licensing process will begin early in the new fiscal year, either with the Five-Year Operating and Renewal Plan of Abitibi-Price Inc. or with Manfor Ltd. Plan which was finally approved through the departmental process in March.

ADMINISTRATION

The Administration Section of the Forestry Branch is responsible for the full operation and co-ordination of all administrative services within the Branch. This includes the financial commitment system, personnel, budget estimates, cash flows, computer coding, departmental equipment, vehicle requirements, accounts payable and receivable, and contracts. The section also co-ordinates the administrative requirements of five regional offices, three district offices and three nursery offices.

This section maintained financial control and accountability for the provincial share of the Canada-Manitoba Forest Renewal Agreement and the Forest Development Program.

The Forestry Branch 1988-1989 fiscal year budget was allocated and expended as follows:

Budget for 1988-1989 Fiscal Year

Current Budget	Staff Years	Budgeted	Expended
Administration	14.0	583.4	551.4
Forest Inventory	21.0	874.3	830.6
Silviculture	7.0	1,053.4	1,069.0
Forest Protection	25.42	2,105.5	1,968.9
Regional Management	21.0	884.0	868.5
Forest Renewal:			
Northern Development Agreement	16.26	2,014.6	1,943.6
Forest Development Program	11.0	2,368.7	2,308.3
Subtotal Current Budget	109.31	9,883.9	9,540.2
Ongoing Capital: Equipment	--	25.0	24.9
Canada-Manitoba Forest Renewal Agreement	1.0	2,922.0	2,904.7
Total Forestry Budget 1988-1989	110.31	12,830.9	12,469.9

FOREST MANAGEMENT

During the year the Forestry Branch responded to industrial development that required a continuous wood supply. Interest in the use of trembling aspen in industrial projects continued to increase.

Action was taken to formulate and implement a Farm Woodlot Program in Manitoba. A woodlot owner survey was conducted to determine the initial interest in woodlot management, and staff developed a potential marketing report for woodlot owners in the original study area of Forest Management Units 01, 20 and 23.

Negotiations continued throughout the year on a proposed Forest Management Licence Agreement covering the original Manfor Specified Area. Maintenance of Forest Inventory activities continued in the Highrock and Nelson River Forest Sections. An area of 62,000 sq. km is involved in the various stages of forest activity.

A final forest inventory report providing new Annual Allowable Cut information for the area was prepared for Forest Management Unit 20 in the Pineland Forest Section.

Forest Inventory

Permanent sample plots designed to track forest growth changes over time continued to be established in representative forest stands across the Province. Permanent plots will be remeasured at five-year intervals to establish growth trends and to predict volume accumulations in the future.

A Site Classification pilot project was completed with the finalization of the test area in the southeastern portion of the Province. This was the second area of a two-year project in co-operation with the Northern Forest

Research Centre of Forestry Canada to examine current forest site classification techniques and procedures for Manitoba.

The FORIST System (Forestry Geographic Information System) operated throughout the year with two shifts. Entry of forest cover data was provided for portions of the Lake Winnipeg East, Mountain, Saskatchewan River, Highrock and Nelson River Forest Sections of the Province covering an area of 70,770 sq. km.

Aerial Photography

The 3,600 sq. km of aerial photography remaining from the 1987-1988 area in Forest Management Units 61, 65 and the southern portion of Unit 66 were completed. In addition, the northern portion of 5,705 sq. km of Forest Management Units 64 and 66 were photographed for a total of 9,305 sq. km in the Highrock Forest Section last year.

Mosaics

Under the Forest Development Program for 1988-1989, 232 air photo mosaics covering an area of 22,080 sq. km were assembled and photographically copied. Negatives of each mosaic (the Highrock Forest Section) were placed with the Survey and Mapping Branch to enable copies to be sold to the public.

Photo Typing

Forest cover was delineated on new aerial photography for portions of Forest Management Units 36, 37, 61, 65 and 66 in the Lake Winnipeg East and Highrock Forest Sections covering a total of 18,290 sq. km.

Preliminary Forest Cover Mapping

Updated forest cover maps were completed for the remaining portion of F.M.U. 31, all of F.M.U. 36 and 37 and portions of F.M.U. 61, 65 and 66 in the

Lake Winnipeg East and Highrock Forest Sections. The area prepared totalled 16,480 sq. km.

Photointerpretation

Photointerpretation areas completed include the remaining portion of F.M.U. 31, all of F.M.U. 36 and a portion of F.M.U. 37 in the Lake Winnipeg East Forest Section, for a total area of 14,180 sq. km.

Forest Surveys

a) Resource Inventory

No new plots were established for the resource inventory. The existing stand and stock volume table was used for Forest Management Units 31, 36 and 37, an area of 18,500 sq. km, which allowed forest survey crews to concentrate on the establishment of permanent sample plots.

b) Growth and Yield

Growth and Yield activity continued with 34 permanent sample plots established holding 7,221 trees. Forest Management Unit 06, of Turtle Mountain, had five plots with 418 trees, and F.M.U. 31 and 29 plots with 6,803 trees.

The forester working on Growth and Yield represented the Forestry Branch at the Westbogy (Western Boreal Growth and Yield) Co-op meeting and at the Forest Modelling Symposium in Saskatoon.

Forestry Geographic Information System (FORIST)

In the Forestry Geographic Information System (FORIST) the loading of all available forest cover information into computer storage continued with increasing success. A second shift of data entry operators continued for the complete year. The following summary indicates the number of forest cover map sheets which are in progress or have been completed and are in the library.

Forest Cover Map Sheets

Year	In Progress	Ready for Library	In Library	Total Map Sheets
Apr.1/88 - Mar.31/89	107	18	651	776
Apr.1/87 - Mar.31/88	65	29	303	397
Apr.1/86 - Mar.32/87	6	9	62	77
Aug.30/85 - Mar.31/86	14	--	20	34
Total as of April 1/89				1,284

UTM co-ordinates for positioning forest cover map sheets into the computer are provided by the Surveys Branch and Mapping Branch. This has a progressive sequence through forest areas based on the priority from a forest industrial utilization point of view.

Eight Forest Management Units have now been completed, and work is underway in an additional 16 in the western and northern portions of the Province.

Two additional "stand-alone" workstations based on IBM System 2 Model 80 and P.C. Arc/Info software were purchased and installed, one in the southeastern regional office on Tuxedo Avenue and the other in the eastern regional office at Beausejour. The purpose of the "stand-alone" system is to allow direct information entry and subsequent impact analysis, as required, for forestry regional offices across the Province, and the Forestry Branch's section offices in Winnipeg. The communication link between the "stand-alone" units and the "FORIST" system will be by standard telephone line or surface mail initially. Computer program development to meet forestry regional office requirements has begun with the entry of timber sale locations and depletion and area entry into the data base. Computer assistance procedures for selecting alternative harvest areas for each timber sale entered have been developed and implemented during the year. Programming for silviculture data entry to enter plantation and stand

improvement location data into the system has commenced.

Forest Management Units 23, 31, 35, 38, 39 and 40 have been processed for volumes and area in summary format as required for the preparation of Forest Inventory reports and Annual Allowable Cut determination.

Table 1: Forest Inventory Projects, 1988-1989

Activity	Area in sq. km
Aerial Photography	9,305
Photo Typing	18,290
Forest Cover Mapping	16,480
Air Photo Interpretation	14,180
Area Compilation (FORIST Library)	70,770
Forest Inventory Reports	8,970
Township Air Photo Mosaics	22,080

Wildfire Management

The 1988-1989 wildfire management area and volume-loss reports were not prepared due to numerous errors in the information supplied combined with difficulties in obtaining an adequate fire map.

Timber Management and Development

For the forest products industry, the 1988-1989 fiscal year was generally a levelling-off period following several years of strong growth. Most mills were operating at (or close to) full capacity, but product prices showed a reluctance to climb further except with kraft papers where, as predicted a year ago, Northern Bleached Softwood Kraft rose to above the $800 U.S. per tonne range in the European market. A shortage of kraft pulp and paper has kept the price

floating upwards for several years and now has made investment in this type of mill more attractive. As a result, a marked increase was noted this year in new mills and expansions to existing ones.

Forest products were exposed to a number of the traditional negative market pressures throughout the year. The strengthening Canadian dollar against the U.S. dollar, rising interest rates, slipping newsprint lineage, and declining housing starts, all contributed to this softening market trend. Bucking this trend, however, were strong offshore sales of lumber, pulp and paper; the surprising strength and breadth of the domestic market; and a shrinking accessible wood supply. These opposing factors all helped to keep forest product prices fairly level throughout the year, except for the kraft paper markets as noted above.

Developments within the forest products manufacturing segment in Manitoba were at an all-time high. After discussions with a number of interested buyers, the government announced it had negotiated the sale of the Manfor complex at The Pas to Repap Enterprises Corp. Inc., a Canadian pulp and paper company with headquarters in Montreal and mills in British Columbia and New Brunswick. Details of the sale and signing of the agreement(s) were not finalized at the fiscal year-end, but it was understood to include a major upgrading and expansion of the existing kraft pulp and paper manufacturing facilities at The Pas.

A somewhat smaller but still significant development was the expansion of Palliser Furniture Ltd., by the addition of a particle board plant at their new Logic Division site in the east end of Winnipeg. The new board manufacturing facility should be operational by late 1989 or early 1990 and will use mainly trembling aspen from the Southeastern, Eastern and the Interlake Regions.

The feasibility study continued throughout most of the spring and summer of 1988 for a waferboard plant for the Swan river area. However, by the end of the fiscal year there had been no further developments.

Timber Utilization

The harvest of timber from Provincial Crown Land totalled 1,856,697 m^3 for the 1988-1989 fiscal year. The softwood component accounted for 1,709,786 m^3 while the hardwood component amounted to 146,911 m^3. This is 2,360 cubic metres more than the previous year and represents a slight increase of 0.13 per cent. The production of pulpwood, railway ties and fuelwood rose, but lumber, posts, poles, mine timber and round timber product volumes declined.

The forest timber revenues slipped to $2,518,014. which represents a decline of 15% from the previous year. This is attributed to the revision of the Abitibi-Price Forest Renewal Agreement and a slight decrease in the number of timber permits issued this year.

The timber stumpage level was reviewed with the use of Manitoba Forest Products price index and resulted in an increase of 15.8% over the 1984-1985 base year. New dues were calculated and the industry was advised that they would come into effect on May 1st, 1989.

A total of 4,771 timber permits were issued this fiscal year. This represents a decline of 739 permits from the previous year. This change in numbers is attributed to a decline of interest in the public cut-your-own fuelwood program and the commercial permit numbers.

Thirty-six timber permit quotas were in force in 1988-1989. This is the first time there has been no change in the number of quota permits from the previous fiscal year since they were first issued in 1965. Timber sale quotas amounted to 197, which is a decline from the 201 in effect on April 30th, 1988,

and a consolidation of 68.8% from the original 631 timber sale quotas first issued in 1965. However, for the first time again since 1965, four new timber sale quotas were created and awarded to the industry. This increased the total number of timber sale quotas to 635 under this system and the 197 which were in force at the end of this fiscal year actually represents a 70% consolidation of these larger quotas.

The 1988 Metric Scaling Licence Certification Course was held from May 30th to June 3rd at Swan River. This year there were 11 candidates with nine successfully completing the requirements to receive (full) scalers' licences. Two departmental and one guest industrial instructor covered the wood measurement theory, field practice, and testing for cubing, and stack and tree length scaling which is used for reporting Crown dues in Manitoba.

Christmas tree growing in Manitoba took a big step forward this year with the formation of the Manitoba Christmas Tree Growers Association. Approximately 65 new and established growers joined the association. Highlights of the association's activities were a quarterly newsletter, contact with other State and Provincial associations, and three general membership meetings to discuss various aspects of Christmas tree growing. Forestry staff from both the Provincial and Federal governments provide time and assistance to this evolving Provincial association and forest industry.

Interest in private land forest management, or what is more commonly known as woodlotting, continued to grow in the Province. A student was hired last summer to conduct a survey in a small portion of the Province to ascertain the level of interest in woodlotting. The survey was conducted and used as the student's Practicum.

The survey was in either the form of 'direct contact' or a 'mail out' questionnaire and the response was considered to be above normal.

The main results of the survey were that a large majority of the forested landowners felt there was not enough information available on woodlotting and that a program should be developed. It is also significant to note that the production of forest-related products was the third most common reason for owning/managing woodlots. As a result of this developing interest, a permanent staff position was assigned late in the year to begin developing private woodlot programs for Manitoba.

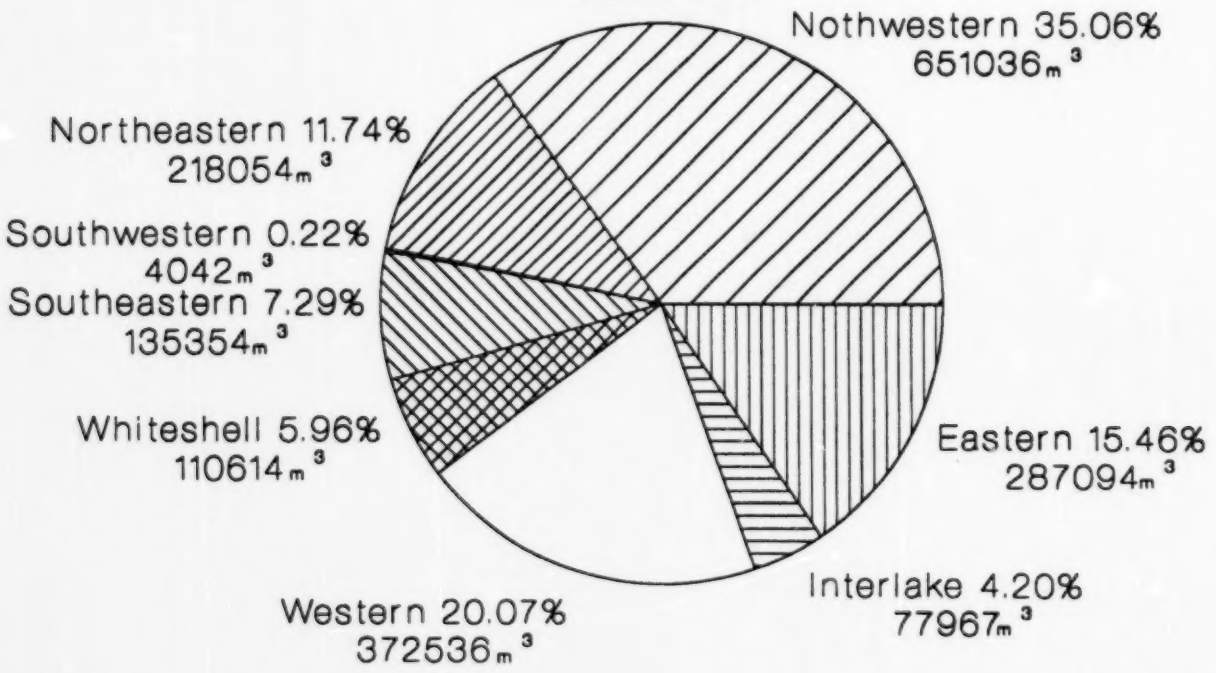
Table 2: Summary of Timber Cut on Crown Land, 1988-1989

Product	Species	Cubic Metres		Percentage
Lumber	Spruce, Pine, Fir, Tamarack, Cedar	588,041		
	Poplar, Birch and other hardwoods	76,503	664,544	35.79
Pulpwood	Spruce, Pine, Fir, Poplar	1,080,256 8,704	1,088,960	58.65
Railway Ties	Pine		263	0.02
Line Poles	Cedar, Pine, Tamarack, Spruce		5	0.00
Fence Posts	Cedar, Pine, Tamarack, Poplar, Spruce, Oak		9,511	0.51
Round Timber	Spruce, Pine, Tamarack		7,678	0.41
Mining Timber	Pine, Spruce		125	0.01
Fuelwood	Birch, Poplar, Pine Spruce and other		85,611	4.61
TOTAL 1988-1989			1,856,697	100.00
TOTAL 1987-1988			1,854,337	

Table 3: Timber Cut by Departmental Region, 1988-1989

Region	Cubic Metres	Percentage
Northeastern	218,054	11.74
Northwestern	651,036	35.06
Southeastern	135,354	7.29
Whiteshell	110,614	5.96
Southwestern	4,042	0.22
Eastern	287,094	15.46
Interlake	77,967	4.20
Western	372,536	20.07
TOTAL	1,856,697	100.0

Diagram 1: Percentage of Timber Produced within Departmental Regions 1989-90



Total Timber Cut = 1,856,697$_m$ ^{3}

Table 4: Record of Timber Scaled or Manufactured, 1988-1989

	Lumber - Cubic Metres						Pulpwood - Cubic Metres				Piece Products - Cubic Metres				Piece Products - Pieces	Fuelwood - Cubic Metres								
																Green								
	Spruce	Balsam	Jack Pine	Other Soft Woods	Aspen	Other Hard Woods	Spruce	Balsam	Jack Pine	Poplar	Railway Ties	Cedar Poles	Jack Pine Poles	Posts	Christmas Trees	Spruce	Jack Pine	Poplar	Other Hard Woods	Dry	Slabs and Tops	Mine Timber	Round Timber	Totals Cubic Metres
Summary by Regions																								
Northeastern	51845		34820		80	61	73797		47789					10	100	1797	2779	628	814	3398			288	216384
Northwestern	179041		105675				214284		142856					43	33	433	308	2178	999	4089		125	425	651629
Whiteshell	17		13412	345	10177	1051	34301	1450	31099	7411	258			487	784	3	880	8486	2188	1942	137		1101	110814
Southeastern	1020		17798	686	35008	764	26882	1267	27380	1163				1403	4548	8	888	5883	5472	4315	380		3073	158884
Southwestern	89				136									13	115			2811	330	881			22	4042
Eastern	1705		10752	247	8741	491	223388	1225	26429	100				170	8111	281	1288	3298	2177	4848	8		212	257094
Interlake	8142		1378		708		47901		13305					1120	167	115	1284	2404	1345	2781	12		884	77867
Western	128333		36315	66	15162	4186	122303	13269	27473	30	5		5	6265	1629	93	385	6797	5555	4340	21		1983	372888
Total	387472	0	219448	1123	69980	6823	744734	17231	318291	8704	263	0	5	9511	15487	2708	7840	29484	18851	28180	888	125	7079	1699887
Summary by Status of Land																								
Provincial Forests																								
Spruce Woods														3				70		6			6	84
Duck Mountain	58823		20707	16	14456	1858	37475	11832	6458				5	2867	1090	30	176	3116	3358	1176	5		1316	161889
Porcupine	84872		16516	25	60	980	78491	1437	20730	30	5			3010		12	23	714	1043	2758	5		410	167089
Sandilands	795		17491	616	24878	1100	33088	1412	31732	2725				1061	2338		913	5832	5208	4283	388		1913	138888
Cormorant	64		41											26		182	180	1720	873	1788			9	4814
Agassiz			725	73	2808		5270		280	5349	38			143	80	5	388	6108	1770	649	67		888	88118
Belair						125	8536	27	4016								140	236	880	48				13807
N.W. Angle	225		1512	43	7480	387	11409	425	1312	300				286	1348		315	138	48	31	8		386	24181
Turtle Mountain					113													25	182	188				488
Whiteshell	17		8820	13	8832		8888	800	23706		222			4	344	3	78	822	127	1128	18		147	82708
Cat Hills			12		28		43		340								8	28		8				488
Brightstone														4	30		3	178	88	88			12	384
Moose Creek	730				8		4821									8	10		8	18				8887
Wampum														108				18	188				188	487
Swan-Pelican									73															73
Total Provincial Forests	123838	0	88834	786	58882	4428	188488	16733	88828	8404	263	0	5	7310	5088	287	2182	17388	13283	12108	482	0	4882	888840
Other Provincial Land	243848		158822	337	14018	2088	888284	1488	228885	300				2201	10381	2501	8858	12108	8888	14042	78	128	3888	1848787
Total	387472	0	219448	1123	69980	6823	744734	17231	318291	8704	263	0	5	9511	15487	2708	7840	29484	18851	28180	888	125	7079	1699887
Summary by Method of Disposal																								
Permit	8888		2381	871	2842	2225	23283	2807	18114	8113	5		5	8141	8802	1308	8781	25888	13881	25488	888		8488	148818
Sales	154788		88441	308	88388	3932	283037	14414	88058	881	258			3378	8878	1403	1788	3881	4823	488		125	1188	871185
Berths	208842		147884	348	8888	388	488335		213121								288		47	188			2	1888888
Seizures	87				282		88	10							8		1							488
1988-89 Total	387472	0	219448	1123	69980	6823	744734	17231	318291	8704	263	0	5	9511	15487	2708	7840	29484	18851	28180	888	125	7079	1699887
			884844						1088880										88811					
1987-88 Total	388088	884	282878	3284	71284	6886	878182	8287	283422	28881	200	38	71	11282	18482	4888	8883	31348	18482	21734	1838	1714	18881	1884887
			723288						1007882										84873					

Table 5: Revenue from the Sale of Crown Timber

Year	Total Harvest (in cubic metres)	Revenue[1]
1979-1980	1,940,082	$ 1,624,290.86
1980-1981	2,320,031	1,908,776.72
1981-1982	1,782,078	1,792,589.82
1982-1983	1,478,092	1,383,734.70
1983-1984	1,500,332	1,964,510.80
1984-1985	1,673,031	2,302,339.73
1985-1986	1,688,897	2,473,081.25
1986-1987	1,669,132	2,682,289.37
1987-1988	1,854,337	2,961,462.33
1988-1989	1,856,697	2,518,014.99

[1] Dues in respect of Crown timber harvested.

Table 6: Annual Forest Production by Forest Product (in cubic metres), 1979-1980 to 1988-1989

Year	Pulpwood		Lumber		Fuelwood		Other		Total	
	Volume(m^3)	%	Volume(m^3)	%	Volume(m^3)	%	Volume(m^3)	%	Volume(m^3)	%
1979-1980	1,124,615	58.0	647,470	33.4	103,716	5.3	64,281	3.3	1,940,082	100
1980-1981	1,458,039	62.9	681,876	29.4	95,893	4.1	84,223	3.6	2,319,991	100
1981-1982	1,100,921	61.8	535,034	30.0	88,369	5.0	57,754	3.2	1,782,078	100
1982-1983	787,879	53.3	518,062	35.1	111,555	7.5	60,596	4.1	1,478,092	100
1983-1984	837,756	55.8	509,476	34.0	102,474	6.8	50,626	3.4	1,500,332	100
1984-1985	1,201,970	71.9	330,228	19.7	103,593	6.2	37,240	2.2	1,673,031	100
1985-1986	1,065,361	63.1	474,826	28.1	110,561	6.5	38,149	2.3	1,688,897	100
1986-1987	927,085	55.5	598,168	35.8	98,039	5.9	45,840	2.8	1,669,132	100
1987-1988	1,007,882	54.4	733,269	39.5	84,573	4.6	28,613	1.5	1,854,337	100
1988-1989	1,088,960	58.7	664,544	35.8	85,611	4.6	17,582	0.9	1,856,697	100

Table 7: Permits, Licences and Quotas on Crown Lands (Including Provincial Forests), 1987-1988 and 1988-1989

	1987-1988	1988-1989
Timber Dealers and Sawmill Licences		
Timber Dealers	65	62
Sawmill Licences	113	117
Permits and Licences Covering Timber Cutting Rights		
Permits	5,510	4,771
Timber Sale Agreements		
Awarded	9	31
Previously Awarded	203	194
Timber Seizures Recorded	4	8
Timber Allocations in Force on March 31st		
Timber Sales	201	197
Timber Permits	36	36
Forestry Revenue (Crown Charges)	$3,282,283.76	$3,494,700.19

Table 8: Permits and Leases in Provincial Forests, 1987-1988 and 1988-1989

	1987-1988	1988-1989
General Permits and Leases		
Sawmill Site	-	1
Trappers' Cabins	38	35
Hunting and Fishing Cabins	4	2
Other Lodges, Cabins, Residences	6	7
Grazing Fences	-	-
Maintain Roads and/or Spurlines	1	-
Youth Groups (Camping and Sports)	7	3
Land Use for Municipal Purposes	8	8
Land Use for Government Purposes	4	9
Miscellaneous	20	31
	88	96
Hay Permits		
Number of Permits	13	17
Tonnes of Hay	206.58	244.45
Grazing Permits		
Number of Permits	3	3
Head of Livestock	58	60

SILVICULTURE

The Forestry Branch and the forest industry were once again able to increase the forest renewal efforts on burned and cutover forested lands. In 1988-1989 there was some form of silvicultural activity on 14,489 hectares. Half the programs were carried out by the forest industry and half by the Forestry Branch. The total area regenerated (planted or scarified for natural regeneration) was 8,646 hectares. This represents a 24.8% increase over the previous years.

In the spring and fall of 1988, approximately 15.7 million bareroot and containerized seedlings were planted. The Forestry Branch planted approximately 8.8 million seedlings of which 60% were planted by tendered tree-planting contractors, with the balance being planted by departmental employees. As in the past, the planting contracts have proved to be very successful and economical, and their use is expected to increase in the future. All the seedlings were produced at the Pineland and Clearwater Provincial Forest Nurseries.

Scarification of cutovers for natural regeneration continued during the year. This method of forest renewal has proved to be very successful on many of the jack pine cutovers. Due to its cost effectiveness, this has become an integral part of the forest renewal program.

The forest industry used herbicides on an operational basis this year for site preparation and for the release of plantations from vegetative competition. The total area treated with herbicide was 594 hectares.

Mechanical thinning or release which covered a total area of 546 hectares was carried out in older plantations and young natural stands as part of intensive forest management.

Silviculture surveys were carried out on 8,646 hectares of cutover and burned forested lands, in order to identify any non-satisfactory stocked land which would require silvicultural prescriptions to bring them back to forest production. Performance assessment plots were also established in cutover lands to track the growth of seedlings during the established period.

Cones were collected throughout the Province. The major emphasis was placed on collecting black spruce seed from the remote seed zones, north of The Pas and around Berens River. A summary of cones collected and seeds extracted is given in a Cone Collection and Seed Extraction Table to follow.

Pineland Provincial Forest Nursery

The Pineland Provincial Forest Nursery shipped 12.5 million seedlings for forest renewal of which containerized seedlings accounted for 2.6 million. About 200,000 jack pine stock was shipped to Saskatchewan.

The new cold storage facility was used to ship overwintered frozen stock in the spring of 1988. Plans were initiated to convert an additional three shade frames into cold frames for the production of greenhouse transplants.he A total of 3.8 million greenhouse and 340,000 bareroot transplants were produced in 1988, over and above the 12.5 million stock.

A total of 428.94 hectolitres of cones was received at the nursery and 237.84 kg of seed extracted in 1988. See Cone Collection and Seed Extraction Table to follow.

Table 9: Cone Collection and Seed Extraction, 1988-1989

Species	Zone	Cones (hl)	Seed (kg)	Seedlot #	Region
Red Pine	1.0	21.6	18.10	438	Southeast
Total		21.6	18.10		
Jack Pine	04.1	14.6	8.04	439	Eastern
	04.1	57.9	32.36	440	Southeast
Total		72.5	40.40		
Black Spruce	11.1	7.25	N/A	N/A	Southeast
	11.2	23.40	12.62	435	Abitibi-
	11.2	0.85	0.48	436	Abitibi-
	11.2	6.0	3.12	437	Abitibi-
	11.3	32.63	9.88	441	Interlake
	11.3	3.7	N/A	N/A	Interlake
	11.5	13.35	7.84	442	Northern
	11.5	2.91	N/A	N/A	Northern
	11.5	12.5	N/A	N/A	Manfor (Area#1)
	11.6	68.2	N/A	N/A	Eastern
	11.7	36.0	N/A	N/A	Manfor (Area#2)
	11.8	43.0	22.04	N/A	Northern
	11.8	4.5	N/A	N/A	Manfor (Area#3)
White Spruce	13.2	23.6	23.60	431	Abitibi-
	13.5	36.55	71.82	432	Manfor
	13.5	2.4	2.72	434	Northern
	13.8	18.0	25.22	433	Northern
		80.55	123.36		

Grand Total **Cones Collected: 428.94 hl**
Seed Extracted: 237.84 kg as of March 31st, 1989

Clearwater Provincial Forest Nursery

The Clearwater Provincial Forest Nursery shipped 4.6 million containerized seedlings to Manfor Ltd. and the Northern Region. These crops were produced using the 20 greenhouses that are now operational at the nursery. All containerized stock was grown in CanAm multi-pot containers.

To meet the projected 4.8 million seedling requirement in the spring and fall of 1989/1990, 20 greenhouses were sown in June 1988 for an overwintered crop. An additional seven greenhouses were sown in January 1989 to produce the current year's planting of 4.8 million seedlings. The projection for 1990 is 6.5 million seedlings.

Tree Improvement and Forest Genetics

The four major programs in the four regions of the province were expanded as follows:

1. Southern Region - Black Spruce

In the Southern Region two family tests, five hectares in size, were planted with black spruce. A total of 25,200 test seedlings were planted to determine the genetic superiority of the 420 individual seedlots or families.

2. Eastern Region - Black Spruce

A Memorandum of Understanding was signed by the Forestry Branch and Abitibi-Price regarding the co-operative tree improvement program in the Eastern Region. Abitibi prepared two 5-hectare family test sites and the Forestry Branch prepared a site at Berens River for planting black spruce in 1990. The initial clearing of nine-hectare seed-orchard sites for the co-operative program was also completed.

3. Northern Region - Black Spruce

A Memorandum of Understanding was also signed with Manfor Ltd. for their co-operative program in the Northern Region. Material from a 372 plus black

spruce was collected by Manfor. A total of 2,400 scions were grafted at Pineland Nursery.

4. Western Region - White Spruce

In the Western Region four family test sites, four hectares in size, were prepared for planting with white spruce in 1990. The 380 families or individual seedlots are currently being grown in the tree improvement facility at the Pineland Provincial Forest Nursery.

The jack pine tree-improvement program, which is implemented by Forestry Canada under the Canada-Manitoba Forest Renewal Agreement, continued ongoing maintenance on the Northern and Interlake seed orchards and established a new seed orchard for Eastern Manitoba. This new "pedigreed" seed orchard is from controlled crosses between the best family test seedlings.

Table 10: 1988-1989 Forest Renewal Activities

1988/1989 Forest Renewal Activities	Province of Manitoba Regional Program	Abitibi-Price Inc.	Manfor	Total
Renewal				
Trees planted (000's)	8,779.7	2,835.4	4,053.6	15,668.7
Hectares planted	3,432.0	1,350.0	2,088.0	6,870.0
Hectares scarified for Natural Regeneration	622.0	Nil	1,154.0	1,776.0
Hectares site prepared	2,462.0	1,648.0	1,733.0	5,843.0
Total area regenerated	4,054.0	1,350.0	3,242.0	8,646.0
Stand Tending				
Hectares mechanically thinned or released or spaced	Nil	246.0	300.0	546.0
Hectares herbicided	Nil	544.0	50.0	594.0
Hectares treated for insect or disease infestation (including weevil eradication but excluding jack pine budworm)	1,843.0	Nil	Nil	1,843.0
Forest Surveys				
Natural Regeneration	6,400.0	1,750.0	4,574.0	12,724.0
Plantations	2,700.0	325.0	1,308.0	4,333.0

FOREST PROTECTION AND DUTCH ELM DISEASE

Dutch Elm Disease

During the 1988 provincial summer surveillance season, approximately 14,000 elms were examined in and around urban and rural municipalities for Dutch elm disease. Of these, 966 were confirmed to have Dutch elm disease and 12,022 were classified as hazards, many of these probably dead as a result of Dutch Elm Disease. Due to the large number of infected elms in wild stands throughout southern Manitoba, particularly in the eastern and central regions, control efforts were concentrated on elms in and around the 43 cost-sharing agreement communities. Trees in the wild were largely ignored due to the impracticality of controlling the disease in those areas. Within the cost-sharing agreement communities most control efforts by the communities were concentrated in the areas of sanitation, pruning and basal spraying with chlorpyifos for the control of overwintering elm bark beetles. The Province is responsible for the survey and removal of diseased and dead elm trees within the agreement communities.

The number of municipalities with Dutch elm disease remained at about 77 during the year. Communities with the disease included such major urban centres as Winnipeg, Brandon, Portage la Prairie, Morden, Neepawa, Selkirk, Steinbach and Winkler. The northwestern disease front is located south of Dauphin in and around the village of Ste. Rose du Lac in the R. M. of Ste. Rose. It appears that the disease entered the area via the Turtle River tributaries from the east escarpment of Riding Mountain National Park. Further west, on the Assiniboine River, the disease was observed to have moved only about 750 metres northward from St. Lazare.

Although Dutch elm disease continues to increase in the wild stands, the number of diseased elms in most urban centres with control programs were

comparably low. Less than one per cent of Winnipeg's elms were diseased, and in Brandon, less than two per cent of the elms were infected.

The City of Winnipeg, which is responsible for its own survey program, reported 910 samples taken this year, 1,426 diseased trees identified, and an additional 3,720 marked as hazards. A total of 5,146 trees are scheduled for removal in the city.

The disease has again continued to spread along most of southern Manitoba's rivers. Large increases in disease have occurred on the Red and Assiniboine Rivers in and around Winnipeg, along the Assiniboine to Portage la Prairie and west of Brandon as far as the St. Lazare area. Over the past few years, the Whitemud River around Westbourne as well as the east escarpment of Riding Mountain National Park have shown a considerable increase in the disease. The smaller river and creek systems in south-central Manitoba also experienced more pockets of infection, thus endangering the farm shelterbelts in the areas around Winkler, Altona, Morden and Carman. The Souris River southwest of Brandon is extensively infected in Manitoba and southward into the United States. Although the river flows back into Saskatchewan, the natural elm population drops off just north of the border. It is expected that the disease will be exported to Saskatchewan via the Assiniboine River (Qu'Appelle Valley) west of the St. Lazare area.

In the western part of the province, the community of Minnedosa which had one diseased tree in 1987 experienced no disease this year. Rivers which was disease-free last year remained disease-free again this year. Neepawa, which had one diseased tree in 1987, had one tree again this year. Virden experienced its first diseased tree this year. Many of the eastern and central communities in the Province experienced an increase again this year. However, decreases were observed in Brandon and Stonewall.

A generally early spring with relatively low infestations of cankerworms, provided decent conditions for sampling of diseased trees. June was fairly productive for sampling. However, most identification was done in July and the first week in August.

From November 1st, 1987 to October 31st, 1988, the Provincial Dutch Elm Disease Sanitation Crew removed about 8,000 elm trees. In addition, approximately 3,100 decadent elms were removed from the Brandon Buffer Zone and 1,000 from the Winnipeg Buffer Zone (La Salle and Assiniboine River areas). Most of the trees were removed using Community Services' staff in a winter-works sanitation program which operated from November 1987 to the end of March 1988.

Spruce Budworm

The spruce budworm infestation persisted in eastern Manitoba predominantly in Whiteshell and Nopiming Provincial Parks and in the Abitibi-Price Forest Management Licence area. Approximately 33,670 hectares suffered moderate to severe defoliation.

An aerial-spray program was implemented over an area of 1,182 hectares of high-use recreational land including campgrounds and cottage subdivisions.

The pre-spray survey for spruce budworm was carried out from May 24th to May 27th, 1988, and confirmed the necessity to spray and the correct timing of the application. Both larval development and shoot development were assessed. Pre-spray population levels were 19 larvae per 45 cm branch in Nopiming Provincial Park, 14 in Falcon and Westhawk Lakes area, and seven at Dorothy Lake.

As of May 27th, 1988 the larval development index was 3.5 and the shoot development index (Auger's Class) was 4.0.

Bacillus thuringiensis (Dipel 132) was applied undiluted at 30 B.I.U. per hectare at a rate of 2.4 litres per hectare. All spray blocks were officially

opened as of Friday, May 27th, 1988. No spraying took place from May 27th to May 29th due to high public use of the recreation areas. Weather conditions which were hot and windy did not allow for any applications prior to May 31st. In addition to wind, fog and heavy thunder showers had to be contended with. Spray operations were completed by Friday, June 3rd. Due to the well-above-normal temperature conditions larval development advanced rapidly during this period. By the time spraying was complete, 5th and 6th instar larvae were very prevalent.

The post-spray survey was carried out from June 13th to 15th, 1988. Larval reduction due to insecticide (using Abbotts's formula) in each of the spray areas was 56% in Nopiming Park, 70% in the Falcon and Westhawk Lakes area, and 47% at Dorothy Lake.

Despite some adverse weather conditions and as a consequence somewhat late timing of the application, some degree of foliage protection was achieved. There was 63% defoliation in the treated area and 86% defoliation in the untreated area in Nopiming Provincial Park. For the Falcon and Westhawk area the figures were 42% and 73% respectively, and 25% and 50% respectively for Dorothy Lake.

Egg mass surveys were carried out in August to predict spruce budworm defoliation for 1989 in Whiteshell and Nopiming Provincial Parks and in Abitibi-Price F.M.L. Populations are expected to remain high in 1989. Moderate to severe defoliation is predicted for the Whiteshell including the Falcon, Westhawk and Dorothy Lake areas. Severe defoliation is predicted for all sample locations throughout Nopiming Provincial Park and the Abitibi-Price F.M.L.

Jack Pine Budworm

Jack pine budworm populations remained low throughout the Province. No noticeable defoliation was reported. Egg mass surveys were carried out within

commercially important jack pine forests to predict 1989 defoliation. Nil to light defoliation is predicted for all areas surveyed.

In 1984, 12 permanent plots were established in Spruce Woods pine plantations to assess both 45 cm and 60 cm branch tips as sample units for predicting the following year's defoliation. Egg mass densities and the corresponding defoliation assessments have been done through 1984 to 1988.

Data analysis indicates a poor correlation as the sample unit. The data will be pooled with Forestry Canada's results which indicate the whole branch to be a satisfactory sample unit.

In 1984 Forest Protection commenced experimentation with a male moth attractant developed by R.P.C. of Fredericton. The objective of this study is to develop an adult moth survey method capable of monitoring jack pine budworm populations at endemic levels. Pheromone traps have been placed at 12 locations throughout the Province for four years (1985-1988). Moth captures declined from 1985 to 1987, but there was a twofold increase from 1987 to 1988 suggesting that populations have reached a low and are now starting to increase again.

Dwarf Mistletoe

Dwarf mistletoe causes extensive damage in Manitoba, reducing both the quantity and quality of merchantable timber. Two species of dwarf mistletoe occur in the Province. Arceuthobium americanum attacks jack pine and A. pusillum attacks white and black spruce. Since the spring of 1984, dwarf mistletoe surveys, research and operational sanitation projects have been carried out under the Canada-Manitoba Forest Renewal Agreement. The Agreement provides $280,000 per year for dwarf mistletoe management over its five-year duration. Due to other priorities, however, the total amount is not always expended.

A comprehensive aerial survey for jack pine dwarf mistletoe was conducted in early 1988 over the central portion of Manitoba. An event recorder (a device

consisting of an audio tape linked with a chart recorder) was used to map 7,500 km in the Province. Parallel lines one mile apart were flown at 60 m.p.h. at an altitude of 500 feet over jack pine cover-type stands. The resulting information was interpreted and transferred onto provincial cover-type maps. Accurate navigation and maintenance of a constant ground speed by the aircraft are essential to the success of this method of passive mapping. Blocks are flown when snow is on the ground because this allows for better definition of the dark dwarf mistletoe brooms, symptomatic of Arceuthobium americanum, against the white snow background.

Subsequent ground truthing covered over 100 km during which dwarf mistletoe infection was rated at 50-metre intervals, resulting in over 2,000 point samples. During the course of the ground truthing, potential treatment sites and harvestable stands were identified. Research data, in the form of mature and juvenile transects, was also gathered.

A total of 11,500 km has now been surveyed aerially with 200 km of ground truthing. It is hoped that in the coming year the survey will be completed in its entirety.

Research on the disease biology and epidemiology of dwarf mistletoe infecting jack pine is being conducted by the University of Manitoba. The focus of this research is the development of a volume-loss simulator model. Parameters describing the behaviour of dwarf mistletoe infection, required in the model, are being evaluated using a spatial analysis system under joint development between the Botany and Computer Science Departments at the University of Manitoba. The analysis is being performed on data from 60 permanent plot sites in infected stands throughout Manitoba.

Additional research required in the development of the loss simulation model includes investigations into the interaction of Armillaria root rot with

dwarf mistletoe infected trees, patterns of spatial and temporal disease development of mortality centres, and relationships between symptom development and tree mortality.

White Pine Weevil

Sanitation pruning to control the white pine weevil, Pissodes strobi, has been partially funded by the Canada-Manitoba Forest Renewal Agreement from 1986 to 1988 in a high-value white spruce plantation located in the Interlake Region. In 1988 a total of 2,813 infested white spruce trees were pruned over a 436- ha area. The number of pruned trees represent 0.4% of the total tree population. This compares to 0.8% in 1986 and 0.7% in 1987. These figures are well below the critical treatable level of 2.0% set in the Province of British Columbia.

Due to the large area covered and the short time span between symptoms becoming visible and adult emergence, pruning crews start as soon as infested leaders wilt. A check survey following operational pruning showed crews were covering a larger area at the expense of missing trees not yet displaying symptoms. It is suspected adult white pine weevil emergence stretches over a 3-4 week period.

Several study plots have been set up in released and unreleased areas to assess whether opening up the stand is resulting in higher weevil populations.

Biosystematic and bionomic studies of Pissodes strobi on white spruce was put forward to the RIDTAC committee in 1988. A more complete knowledge of the white pine weevil's life-cycle is required to set pruning operation guidelines.

Plantation Pest Surveys

The Manitoba plantation pest survey was conducted in 26 plantations covering 871 ha. In total, 2,601 trees were assessed in 335 plots. Of the 26 plantations, 18 were conducted jointly with one provincial staff member and one CFS ranger.

For the second consecutive year the survey was carried out in red and jack pine plantations in the Southeast Region of Manitoba ranging from 6-32 years of age. The survey is designed to gather baseline data on major plantation pests causing deformity, growth loss and/or mortality in young stands. More detailed impact studies and/or pest management decisions will be based on these initial surveys. Eventually survey data and maps will be downloaded into the Manitoba Forestry GIS system for use by regional staff.

Manitoba continued with the grid pattern survey which covers the plantation systematically. The survey method was modified in several ways in 1988 to simplify data collection and increase the area covered. Distance between plots and grid lines was increased from 80 to 150 metres. As a consequence, sampling intensity was reduced from 0.4% to 0.2% in 1988. Also, emphasis this year was placed on damage assessment rather than pest identification. These changes resulted in a four fold increase in the area covered using half the staff.

The survey allows for detection of tree damage and pest identification between plots as well as within plots. Accurate maps are drawn showing grid lines, plot locations, pockets of mortality, residual pockets, etc. Pest damage observed between plots is recorded. Often significant pest problems and tree damage were found along grid lines rather than within plots.

Western Gall Rust

Western gall rust is a disease of jack pine that can lead to serious volume loss, especially when occurring in young plantations. At the present time, jack pine accounts for 23% of Manitoba Natural Resource's (MNR) planting stock and is projected to increase to 28% by the year 2000. Currently, the Canadian Forestry Service and MNR have established an interim seed orchard and plan for future seed orchards from which all jack pine seed requirements for provincial renewal programs will be collected. The Western Gall Rust Resistant Study was

initiated in order to identify jack pine families that are resistant to western gall rust and to include them in the ongoing jack pine tree improvement program in Manitoba.

This year was the first year of the three-year study which is a joint project of CFS Edmonton and the Forestry Branch. During this field season, seedlings (grown from excess seed that was used to establish the interim seed orchard) were inoculated with spores collected in the spring from the Eastern Breeding District. In the fall, field assessment for rust infection was conducted on the original family test replicates located in southeastern Manitoba. Their susceptibility to western gall rust will be included in the criteria for ranking families to determine which will be included in the Province's second generation program.

Armillaria Root Rot

As part of a jack pine dwarf mistletoe management program, red pine, a non-host species, was planted in Belair Provincial Forest during the 1970's. Growing on typical dry jack pine sites the young red pine have experienced mortality due to drought and Armillaria root rot. Armillaria activity was monitored in five infection centres from 1983 to 1988. Tree mortality to date in each of these was 41%, 35%, 19%, 15% and 18%, respectively.

Other investigations are ongoing to determine what conditions are necessary in mature stands prior to harvest which may create a root-rot hazard for the next generation of trees. This work includes consideration of overmaturity, site quality and current disease conditions such as dwarf mistletoe. The trap stake method (devised by Mallet and Hiratsuka) is being used to detect the presence of Armillaria under a variety of conditions. Fresh cut aspen stakes were pulled up this summer after remaining one year in the field. Culturing for Armillaria has been completed. A report of the results is soon to follow.

Pine Root Collar Weevil

As part of a dwarf mistletoe management program resistant Scots pine was planted at Grand Beach in the 1970's. This exotic species has proved to be highly susceptible to the pine root collar weevil. A survey of three plantations was done in September 1988. The level of dead (due to weevil) and infested trees combined is 59%, 54%, and 73% respectively for the three surveyed plantations. Scots pine is the most commonly planted Christmas tree in Manitoba. As a consequence of its high susceptibility to weevil it should not be planted in close proximity to jack pine forests which is the weevil's natural habitat.

THE FORESTRY INITIATIVES

The Forestry Initiatives Program consists of both the Canada-Manitoba Forest Renewal Agreement (ERDA) and the Forest Development Program. The five year agreement with Canada came to a close on March 31st, 1989.

The primary objective of the Forestry Initiatives Program is to improve the level of forest management so that the timber supply capability within the Province will match industry's demands for the resource. Each component of this program has similar objectives, goals and detailed project areas.

Both the Agreement and the Forest Development Program are divided into four program areas: forest renewal; intensive forest management; applied research, technology transfer, opportunity identification and nursery development; and public information, evaluation and administration.

The Provincial funds were contributed under the Canada-Manitoba Forest Renewal Agreement to the operation and maintenance of the Pineland Provincial Forest Nursery, and included the lifting, grading, packaging and shipping of 12.5 million seedlings. Approximately 7.6 million trees were planted with funding under the agreement. Also under the Provincial direct program, 166 hectares were site prepared in the Western Region, 653 hectares were scarified in the Northern Region; 32 hectolitres of black spruce cones were collected in the Interlake Region, and 20 miles of road graded and seven miles gravelled in the Rice Creek area. The contract with the University of Manitoba for the research on dwarf mistletoe infecting jack pine was completed, and an aerial survey for jack pine mistletoe took place over an area of 150,000 hectares completing the jack pine mistletoe aerial survey for the Province. Two regional work stations were purchased for the Southeast and Eastern Regions to provide for direct activity information entry and subsequent impact-analysis options. The Province is continuing to load the geographical information system and there were 776 forest

cover map sheets produced in 1988-1989 with a total of 1,284 map sheets produced since April 1985. The number of air photo mosaics assembled, photographed and printed this fiscal year was 232.

The Federal component involved the two companies, Abitibi-Price Inc. and Manfor, which acted as delivery agents for the program. A total of 9,678 ha were surveyed, over 2,000,000 trees were planted, and 375 ha were site prepared. In addition, 475 ha of spacing was carried out while 136 ha were treated with herbicides. A seed orchard was completed at Oakbank. An evaluation of the five years of the Agreement was completed and the recommendations were reviewed and assessed.

The public information program continued and approximately 50,000 visitor contacts were made at 13 community fairs and exhibitions. A significant amount of material was sent to local schools for use within the Manitoba system.

The third component of the Agreement is the cost-shared portion. Under this program, many research projects were implemented under the Memorandum of Understanding (M.O.U.) of the Forest Research Committee in the areas of regeneration, forest nurseries, site classification, yields of managed stands, forest environment, fire management, forest economics, tree improvement, and insects and disease. Also cost-shared in this program was the lifting of field transplants and transplanting of approximately 200,000 seedlings at the Pineland Provincial Forest Nursery. Following is a financial summary of their programs.

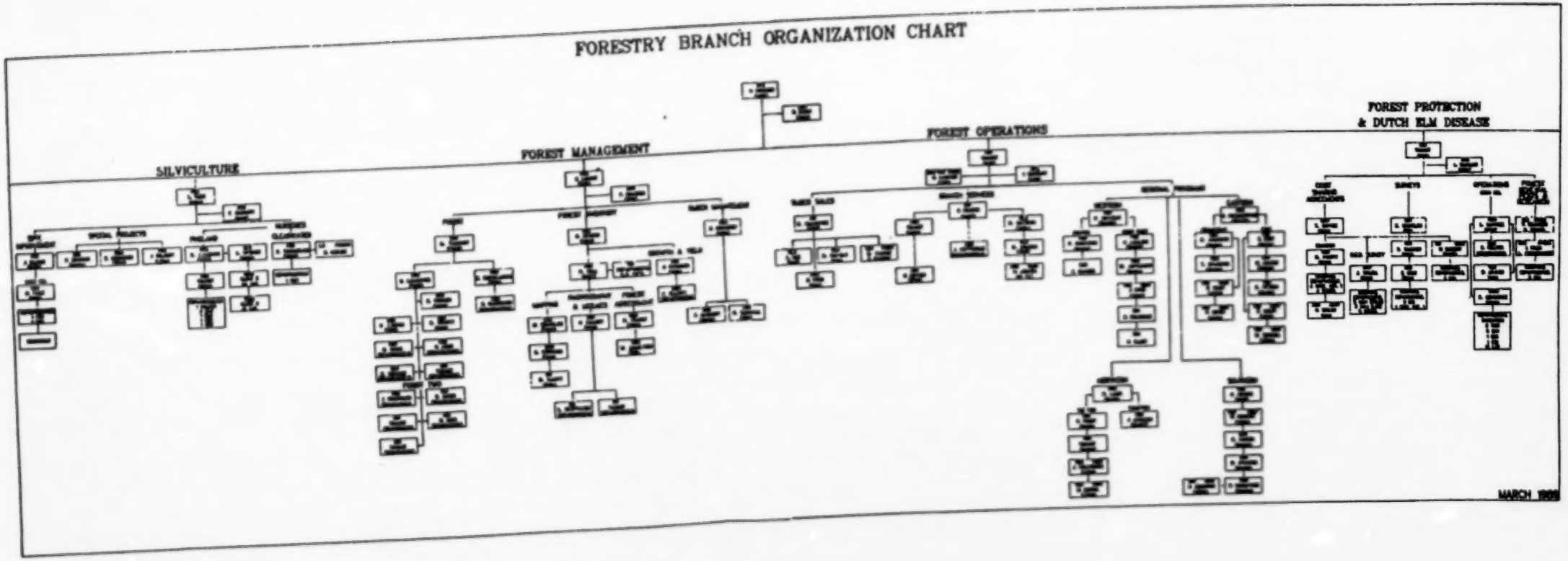
Table 11: Summary of Funding of Forestry Initiatives Program
(000's)

CANADA-MANITOBA FOREST RENEWAL AGREEMENT	100% PROVINCIAL ALLOTTED	100% PROVINCIAL EXPENDED	50/50% ALLOTTED	50/50% EXPENDED	FEDERAL ALLOTTED	FEDERAL EXPENDED
PROGRAM "A" Forest Renewal	$ 1,184.9	$ 1,184.0	-	-	887.4	$809.3
PROGRAM "B" Intensive Forest Management	485.2	454.6	-	-	496.1	497.5
PROGRAM "C" Applied Research, Tech Transfer, Opport. Ident & Nursery Develop	560.4	560.0	$702.0	$692.5	687.3	687.2
PROGRAM "D" Public Information, Evaluation and Administration	16.5	13.6	-	-	161.0	161.1
AGREEMENT TOTALS 1988-1989	$ 2,922.0	$ 2,904.7	$ 702.0	$ 692.5	2,231.8	$2,155.1
FOREST DEVELOPMENT PROJECT						
PROGRAM "A" Forest Renewal	$ 230.1	$ 552.6				
PROGRAM "B" Intensive Forest Mgmt.	1,500.0	2,164.8				
PROGRAM "C" Nursery Development	508.6	714.3				
PROGRAM "D" Public Information	130.0	144.6				
FOREST DEVELOPMENT TOTALS 1988-1989	$ 2,368.7	$ 2,308.2				
GRAND TOTALS	$ 5,290.7	$ 5,212.9	$ 702.0	$ 692.5	2,231.8	$ 2,155.1

The Forest Development Program is a completely provincial component and is part of the Forestry Branch's ongoing budget. This program is managed and delivered in much the same fashion as the Canada-Manitoba Forest Renewal Agreement. The Forest Development Program is divided into the four areas of forest renewal, forest management, nursery development and public information, and it continued to support projects under the Agreement. As part of forest renewal 900,000 trees were planted in the Eastern Region, and 2,400 hectares of land were site prepared and scarified in various regions for regeneration.

In the Porcupine Provincial Forest, 2.5 miles of road were constructed to access hail-damaged timber, 20 miles of the Hart Mountain Road was brushed to clear debris, 7.4 hectares were cleared for blowdown in the Steeprock area to reduce fire hazard and five hectares in the Cowan Wayside Park were cleared for dwarf mistletoe.

The Forest Development Program also contributed to the operation and maintenance of both Clearwater and Pineland Provincial Forest Nurseries.


FORESTRY BRANCH ORGANIZATION CHART
SILVICULTURE
FOREST MANAGEMENT
FOREST OPERATIONS
FOREST PROTECTION
& DUTCH ELM DISEASE
MARCH 1988